ENVIRONMENTAL MONITORING PROGRAM

Recognizing that scientific research and related logistic support can have effects on the antarctic environment, the Antarctic Treaty Consultative Parties adopted recommendations on environmental monitoring in Antarctica with two important goals - to detect any unforeseen effects, and to verify the actual impact and scope of those effects that were anticipated.

The Protocol on Environmental Protection to the Antarctic Treaty also requires that environmental impacts be monitored. The U.S. Antarctic Program (USAP) is developing an Environmental Monitoring Program designed to detect and measure any impacts from science and operations at its research stations in Antarctica. Only with a sustained and coherent monitoring program can a reliable basis for sound environmental management decisions - and possible improvements - be established. Data obtained from the monitoring program will be used to document baseline conditions, verify operational impact, and monitor activities undertaken to recover from accidental impacts to the environment.

Spatial and temporal scales of human disturbance - McMurdo Station, Antarctica.
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Antarctica represents perhaps one of the most carefully-tended and strictly-monitored habitats on Earth. Aside from the manifest desire to protect the flora, fauna and the atmosphere of a relatively pristine environment, there is the value the extreme southern latitudes provide as a virtual baseline barometer of global pollution. The Antarctic Treaty's Protocol on Environmental Protection, supplemented by the policies and practices of the nations who work and do science there, have combined to focus scrutiny on any anthropogenic impacts that can be foreseen or detected.

This 3-year project is collecting a system of observations that should enable scientists to be more aware of any such impacts - on both marine and terrestrial habitats - in and around McMurdo Station, locating them precisely and tracking them over time.

Using a combination of aerial photography and point-data sampling grids at various spatial scales, we will measure a series of attributes indicative of change within these two habitats. Our objectives are to determine:

• the spatial and temporal scales of change, and its origin;

• how efficiently this observational system documents relevant changes in important habitat characteristics; and

• the usefulness of various approaches to reference or control locations.

We will use GIS-techniques and geostatistical methods to organize these diverse data sets into a coherent, coordinated framework. The results should provide fundamental scientific information for developing a long-term strategy to document and minimize the impacts of future science (and support operations) on antarctic resources and values. (EO-318-O)